IBOC in its present form on the AM band would most likely be a step backwards in sound quality for both analog and digital portions of the signal. In the mid 1990s the NRSC pre-emphasis curve and frquency limit of 10.2KHz was adopted to help relieve the overcrowding in the AM band especially in the NorthEast U.S. This was badly needed even for daytime in the NorthEast U.S. although some parts of the country could have stayed with the 15KHz limit and have been just fine during the daytime. The hybrid version of AM IBOC requires the analog portion of the signal to be limited to a 4.5KHz response to allow room of ~5KHz for the IBOC portion of signal if it was to reamin witin the NRSC emission mask of 10.2KHz. This is not much more audio bandwidth than a telephone line that a 56Kbps modem uses and after years of modem research this appears to be the maximum raw data rate capable within this limited audio bandwidth and signal to noise ratio. A twisted pair telephone line offers a level of interference protection from outside signals that is not available in the hostile and unpredictable environment of the airwaves. Unlike a modem that has full duplex communication for error correction a simplex IBOC transmittion must rely on extra redundancy for error correction/concealment and thus reducing the available data rate for the audio program. For IBOC to offer FM like sound on AM you would need a data rate of ~96-128 Kbps to deliver the audio signal using todays audio compression algorithms. The easiest way to increase the available data rate in this environment is to increase the bandwidth of the emissions mask past the 10.2KHz limit and maybe past 15KHz. As for reasons stated above this should not be granted. If increased bandwidth was allowed then the situation in the NorthEast would make IBOC impossible even for daytime use especially if every station in the NorthEast increased their bandwidth past the 10.2KHz limit to carry an IBOC signal. The characteristics of a digital signal is more like a continious wave and results in a modem like or buzz saw like sound for analog reception where the IBOC signal of an adjacent signal falls within the bandwidth of analog portion of the signal. The analog portion could also cause signifigent packet loss for the digital portion of an adjacent IBOC signal. If all stations were to transmitt hybrid IBOC both analog and digital portions of the signals could be mostly unuseable in highly conjested areas; thus encouraging an excelerated migration to a non-hybrid full digital IBOC to reclaim the analog bandwidth to help minimize the interference issues. Whether this would be enough to reduce the occupied bandwidth and/or improve signal to noise issues and minimize the interference enough in congested areas has yet to be determined. The end effect of this could then create an artificial need to upgrade to IBOC receivers since there would no analog signal for existing radios. Under no circumstances should a program like this of forced obsolescence of analog receivers be allowed.

If IBOC is to be implemented then the existing the hybrid version should maintain a high level of compatibility with analog receivers offering at least a 6KHz audio response and not 4.5KHz. Twenty years ago existing receiver compatibility for envelope detectors was a big deal for the FCC when adopting AM Stereo and as a result a system emerged in its early days that had some shortcomings which was later adopted. After improvements in decoder design the adopted system

functions very well providing stereo coverage eqivialant to the extendend local coverage area for mono. For IBOC field tests have shown that this is not the case and even during the daytime it has a reduced coverage area as compaired to the analog signal. For those outside the digital coverage area an IBOC receiver would have to fall back to analog which means that if the DX benefits of the AM band are to be maintained IBOC on AM would have to remain in a hybrid state indefinitely. Field tests of IBOC have shown that this technology is suitable for daytime use only and with the complexity of the receivers and high cost it is unlikely that the public will shell out the money for an inferior sound, reduced coverage and daytime hours only.

In the field tests for IBOC AM the MPEG2 algorithm was used and the sound quailty was somewhat better to internet streaming over a 56K modem for stereo but it was not FM Stereo quality and even full bandwidth AM Stereo is better. This is the other limitation that faces IBOC on AM and would require a much higher compression rate of probably 3-4 times greater than what is available today. The Lucent PAC audio compression algorithm is what is supposed to be used in IBOC's final form and whether or not it can offer the additional compression needed has yet to be demonstrated. A lot of research has gone into audio compression algorithms over the years and if this level of compression was possible with todays technology it would have already happened with internet streaming. The demand for an FM Stereo quality stream over a 56K modem has been there and the internet and computer industry has yet to make this possible even though the revenue possibilities from internet streaming of high quality music are widespread. Just as modem technology has reached its peak for the enviornment it has to operate in audio compression is also reaching its peak and in the comming years a 20-30% increase will probably occur but probably not enough to meet the needs of IBOC on AM.

The AM band plays an important role in bringing information to the people especially during emergency situations and its DXing capability ensures that listeners in fringe areas can receive this information. Hybrid IBOC has the potential to diminish the quality of the analog signal if not make it unuseable in some cases for listeners in these fringe areas. This not only can occur from the digital portion of the IBOC signal but also from adjacent and co-channel signals carrying the IBOC signal. It would not be a wise decision to allow IBOC to sacrifice the DX characteristics of the AM band for this very reason. For those using small portable AM radios will find that the IF filtering does not have enough selectivity to attenuate the digital portion of the hybrid IBOC signal to provide good audio quality for analog reception. The situation for wide bandwidth radios would be even worse making them useless unless they had a narrow bandwidth switch.

With the skywave characteristics of the AM (Medium Wave) Band it is questionable whether or not nighttime IBOC will ever be possible leaving IBOC for daytime use only. The AM band occupies less than 1.2MHz of the radio spectrum and analog AM broadcast is very spectrum effecient compaired to FM and is questionable whether IBOC will be able to meet this and provide the same audio qiality. The existing AM band should be left as it is and a new area of spectrum needs to be used for DAB. Using spectrum that does not have the interference and

noise issues that medium wave has would be better suited for DAB. There is no issue with backwards compatibility that has to be met allowing complete use of the spectrum for DAB with greater flexibility to create a higher quality signal. Finding 1.2MHz of spectrum to use for DAB shouldn't be too hard to find. This is less than 1/4 of a TV channel. Both Canada and Europe opted for a separate band for DAB instead of an IBOC scheme called Eureka 147 and has proven technically successful. Leaving the AM band as it is also means that googles of AM radios will not be made obsolete saving our landfills from being polluted with useless AM radios.

Cotrary to the public's view that analog AM sounds bad because just it is AM is false. The poor fidelity associated with AM is directly attributed to the narrow bandwidth IF filtering used in receivers today. If an AM radio met the AMAX specifications for frequency response most people would be unable to tell the difference between FM when it comes to news and talk. Voice based programs on AM sounds great if you have a wide bandwidth radio like a GE SuperRadio or a wide bandwidth AM Stereo radio found in most late model Chrysler vehicles. With this in consideration why is IBOC needed when analog AM broadcasting has the potential to provide a better signal with greater coverage. Proven radio technology for great analog reception has existed for years and is less complex and much cheaper than IBOC receivers.

Considering the cost of the receivers, power consumption, lack of availabe technology for small portables and daytime use only, leaves a very steep hill for IBOC on AM to climb to gain the public's adoption, much more so than AM Stereo ever had. Just look at the AM Stereo debacle as a example which had much fewer issues to overcome than IBOC has. At one time portable AM stereo receivers sold for less than $40 but portable IBOC receivers don't exist and the smallest digital receiver available for satellite DBS is three to four times the cost. Even though Eureka 147 in Canada and Europe is a technical success it has not been a complete marketing success. Sales have been flat and most people are satisfied with the quality of services provided from AM or FM. Our own satellite DBS systems are having a slower takeoff than expected but has the potential offer superior sound than what is possible with IBOC on either AM and FM given that it is not a technology that has not been grafted onto the existing broadcast service.

In summary IBOC on AM is a technical failure and if implemented would most likely suffer a marketing failure since it does not provide the consumer with a good cost/benefit investment. I does not offer a big enough increase in overall quality for the consumer to justify a migration to IBOC and maybe a reduction in quality in its early implementation. IBOC on AM should be abandoned and broadcasters need to look for other ways to improve their revenue stream and forget about IBOC being the savior of AM radio.